

Ser. No. 10/691,790

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JUL 12 2007

Amendments to the Claims

1. (Currently amended) A gas turbine engine combustor comprising:
 - an inboard wall;
 - an outboard wall; and
 - a forward bulkhead extending between the inboard and outboard walls and cooperating therewith to define a combustor interior volume,wherein, at least a first wall of said inboard and outboard walls comprises:
 - an exterior shell; and
 - an interior heat shield comprising a plurality of leading panels adjacent the bulkhead, each panel having:
 - an interior surface;
 - an exterior surface;
 - a perimeter having leading and trailing edges and first and second lateral edges;
 - a plurality of cooling gas passageways having inlets on the panel exterior surface and outlets on the panel interior surface; and
 - a rail, protruding from the exterior surface and recessed from the leading edge by 3-10 mm along a majority of the leading edge.
2. (Original) The combustor of claim 1 wherein the rail contacts the shell.
3. (Original) The combustor of claim 1 wherein the first wall is the outboard wall.
4. (Original) The combustor of claim 1 wherein the first wall is the outboard wall and wherein the inboard wall comprises:
 - an exterior shell; and
 - an interior heat shield comprising a plurality of panels having:
 - an interior surface;
 - an exterior surface;
 - a perimeter having leading and trailing edges and first and second lateral edges;

Ser. No. 10/691,790

a plurality of cooling gas passageways having inlets on the panel exterior surface and outlets on the panel interior surface; and

a rail, protruding from the exterior surface and recessed from the leading edge by 3-10 mm along a majority of the leading edge.

5. (Original) The combustor of claim 1 wherein the shell has a plurality of apertures, positioned to direct cooling air against the panel exterior surface between the leading edge and the rail.
6. (Original) The combustor of claim 5 wherein the apertures are positioned to preferentially direct said cooling air along areas circumferentially aligned with fuel injectors.
7. (Original) The combustor of claim 1 wherein the rail is recessed along the entire front edge by at least 3.5 mm.
8. (Original) The combustor of claim 1 wherein there is a gap between the exterior surface and the shell having a height of 1-3 mm.
9. (Withdrawn) A gas turbine engine combustor comprising:
 - an inboard wall;
 - an outboard wall; and
 - a forward bulkhead extending the inboard and outboard walls and cooperating therewith to define a combustor interior volume,wherein, at least a first wall of said inboard and outboard walls comprises:
 - an exterior shell; and
 - an interior heat shield comprising a plurality of panels having:
 - an interior surface;
 - an exterior surface;
 - a perimeter having leading and trailing edges and first and second lateral edges;
 - and

Ser. No. 10/691,790

a plurality of pins protruding from the exterior surface toward the shell wherein the shell has a plurality of holes for directing air to a space between the shell and heat shield and adapted for preferentially directing said air toward leading edge portions of first stage vanes of a turbine section.

10. (Withdrawn) The combustor of claim 9 wherein the plurality of holes comprises a plurality of alternating first and second groups of holes having at least partial differences in at least one of size and distribution.
11. (Withdrawn) The combustor of claim 9 wherein the plurality of pins contacts the shell.
12. (Withdrawn) The combustor of claim 9 wherein the plurality of pins is a continuous uninterrupted array.
13. (Withdrawn) The combustor of claim 9 wherein the plurality of pins a plurality of circumferential rows of pins, each row being out of phase with any adjacent row.
14. (Withdrawn) The combustor of claim 9 wherein the first wall is the outboard wall.
15. (New) The combustor of claim 1 wherein the rail is a perimeter rail having portions along the first and second lateral edges and trailing edge.
16. (New) The combustor of claim 15 wherein the portions along the first and second lateral edges and the trailing edge are not recessed from the first and second lateral edges and trailing edge, respectively.
17. (New) The combustor of claim 1 wherein the bulkhead comprises a plurality of heat shield panels, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels.